

## **Method and System for Automatically Updating Contact Information within a Contact Database**

### **Field of the Invention**

This invention relates to a method of updating, maintaining and verifying contact  
5 information for various contacts held in a database and more particularly to an automated  
method of maintaining the contact information fields within a contact database without  
requiring an individual to manually update same.

### **Background of the Invention**

In the past, people have maintained contact lists on paper. The proverbial “black  
10 book” is a good example of a list of individuals and their contact information.  
Unfortunately, it is not uncommon that upon attempting to contact someone one  
discovers that the information is no longer accurate. This is of tremendous inconvenience,  
especially during emergency or time limited situations. Unfortunately, the task of  
maintaining a large contact list current is often too onerous for the few times one needs to  
15 contact each individual.

Therefore, whenever someone changes address, phone numbers or any other piece  
of contact information, there is a necessity for them to provide their contacts with the  
most current contact data. Conventional methods of accomplishing this task include  
sending updated information by email, via facsimile, or even by telephoning to contacts  
20 in an address book and making others aware that some information has changed and they  
need to manually update their contact list, which is time consuming.

A service offering automated updating of electronic contact information and  
ensuring most current contact information is offered by PeopleStreet through their World  
Wide Web site PeopleStreet.com. PeopleStreet addresses the difficult task of enabling  
25 people to stay connected to their many circles of contacts. The service provided by  
PeopleStreet manages the personal information and provides a dynamic link to all  
personal and professional relationships. This is performed by providing a method for

each user to update their own address book entry, thereby automatically updating all the other user contacts of their new address book entry, wherever they may be.

Although the service that PeopleStreet provides does automate this tedious process, it does require that each party is a member of the service. In this manner  
5 information is updated from and to all parties subscribed to the service. This facilitates updating your personal information and being updated of others. A shortcoming of the method is that members of the address book, which are not already subscribed, still have to manually inform the subscribed user of their updated contact information according to the prior art updating method.

10 Contact.com also offers a similar type of contact service, which provides for the exchange of personal information. Once again, subscribed users decide which of their contacts are privileged to which information fields and as a result when the contact changes their personal information all the other address books linked to the contact are updated. This form of service requires the information to be stored on a central storage  
15 system. Although security may be strictly enforced, there are still security concerns because all personal information is accessible from outside the server.

It would be highly advantageous to provide a method for updating contact information in an automated fashion absent either security concerns or mandatory subscription to a service by each party within a given contact list.

## 20 **Summary of the Invention**

The present invention seeks to automate the task of maintaining an up to date electronic contact address book. Advantageously the invention only requires membership by one user, enabling them to have their contact information automatically maintained. Provisions are made for an optionally installed program on the contact computer system  
25 allowing for the automatic maintenance of contact request messages sent from the user to the contacts such that contacts do not feel bombarded by the periodic messages sent by the user to ascertain the validity of the contact information.

## Detailed Description of the Invention

Generally, according to the invention a method is provided for communicating between at least two parties for the exchange of personal contact information in such a manner that only one party is actively subscribed to the service and such that all of their electronic contact information is automatically updated. Thus, the need for split contact lists – those who are subscribed and those who are not – is obviated.

Referring to **Fig. 1**, a simplified flow diagram of a method according to the invention for updating contact information stored in an electronic form is shown. For example, a contact list is stored within a personal digital assistant in the form of an address, phone and email contact list. Typically, such a list is both portable and conveniently accessible. Convenient access includes the ability to search and group contacts within the list.

In order to update the contact list, the method is initiated by at least one user, referred to as “the user.” The address book set-up by the user typically contains the contact information of all the contacts with which the user wishes to communicate. Preferably, the contents of the user’s address book reside with the user, without having copies of personal data or the personal data of others being stored on a central server.

Upon initiating the method, a message is transmitted to each individual within the contact list requesting updated contact information. Typically, the message includes current contact information for the recipient in order to allow the recipient to indicate that no change has occurred. There are a number of possible outcomes to the step of transmission detailed above resulting in contacts classified into three groupings; valid contacts, suspect contacts and invalid contacts, as will be described in the three cases below.

First, the transmission may fail. Preferably, the transmission is resent to verify that the failure was not caused by a temporary problem. Upon determining that the failure was not caused by a temporary system problem through a predetermined number

transmission resends, the contact is noted as invalid since it is evident that the contact information used is no longer current.

Second, the transmission is not responded to after several contact attempts and the transmission does not appear to fail, in which case it is assumed that the contact  
5 information is correct. After a predetermined number of communications with no response the contact is noted as being suspect and therefore a follow up using another method of communication is required.

Third, the transmission is responded to with either an indication that the contact information is unchanged, or that it has changed. This type of contact is noted as a valid  
10 contact and the contact information changes are automatically entered within the contact list.

Typically, the step of automatically entering the updated contact information involves parsing the response to determine contact information therein. Once the contact information is determined, it is compared to current contact information allowing the  
15 changes to be detected and then, the changes are implemented. Of course, when the response is in a known format, the step of comparing the contact information is obviated.

Advantageously, the contact information is only updated when the user requests an update, and as such, the user's information is not changed without their knowledge.

In **Fig. 2** another embodiment of the invention is disclosed where the method for  
20 updating contact information stored in an electronic form is shown. Upon initiating the method, a message is transmitted to each individual within the contact list requesting updated contact information by facsimile. Typically, the message includes current contact information for the recipient in order to allow the recipient to indicate that no change has occurred.

25 There are a number of possible outcomes to the step of transmission detailed above. However the one of primary concern is the receipt of a reply, in the case of a valid contact. The reply in this case is a facsimile message. In order to update the user contact list an electronic representation of this facsimile message is produced in the form of an

electronic image of the facsimile document and the electronic representation is automatically parsed to detect contact information therein which is then automatically entered in appropriate fields in the user's contact list.

Typically after sending of an electronic facsimile message a reply is generated by the receiving system indicative of a successful transmission. However in some cases no form of reply is received from the contact system and the success of the transmission cannot be verified. As a result after some prescribed amount of time the facsimile message is resent to verify the contact information. If after a specified number of facsimile transmission attempts there is still no indication of a successful transmission from the contact system the contact is noted as suspect.

If an error reply is received from the contact system after transmission of an update request message, the message is resent to make sure the error was not caused by a system problem. After a predetermined number of unsuccessful contact attempts the contact is noted as invalid.

For example, a form such as that shown in **Fig. 2a** is used with known boxes indicated for different contact information. Parsing of manually entered data in specific boxes is well known in the art.

Referring to **Fig. 3a**, a simplified flow diagram is shown wherein the transmission medium is the Internet. In order to update the contact list, a user initiates the method. Upon initiating the method, an electronic message is transmitted to the electronic address of each contact stored within a contact list. Once the electronic message is received on the contact system the message is verified before further action. Typically, the electronic message includes a subject line indicating a request for contact information update as well as current contact information for the recipient in order to allow the recipient to indicate for convenience that no change has occurred when this is the case. There are a number of possible responses the user system may receive and each is detailed below.

A first possible response is as follows: the transmission may fail and result in an undeliverable electronic message. In these cases, it is evident that either the contact

information used is no longer current or the failed message delivery was caused by a temporary system or network problem. Preferably, when a delivery error occurs the electronic message is re-sent to verify that the failure was not caused by a temporary problem. Upon determining that the failure was not caused by a temporary system  
5 problem through a predetermined number transmission resends, the contact is noted as invalid since it is evident that the contact information used is no longer current.

A second possible response is as follows: the transmission is not responded to but no electronic message delivery failure is noted, in which case it is assumed that the contact information has been received and is correct. Of course, this is not necessarily the  
10 case, and optionally for important contacts, a follow up communication is initiated to verify the information. Preferably, a request for client contact is provided after a predetermined number of consecutive occurrences of this possible response from a same contact.

Typically in the second case there is no reply received from the contact within  
15 some predetermined time period. In this case the contact has no method of automatically replying to the electronic message or perhaps an error has occurred during transmission. After a predetermined number of communications with no response the contact is noted as being suspect and an indication is provided to the user to take action and determine the problem with this contact information. Preferably, the indication is generated only after a  
20 predetermined number of contact list update attempts with no response. This allows the above noted assumption that the contact information is correct to be verified at intervals when no other data is received from the contact.

In the third case a response to the transmitted electronic message is received. The response is assumed to have been transmitted electronically from the contact to an  
25 electronic address of the user and as a result the contact is noted as valid. Upon receipt of the response on the user system the message is interpreted and when contact information within the message has changed, the user system automatically updates the contact list with the changes.

Referring to **Fig. 3b**, a flow diagram is shown wherein the transmission medium is the Internet and communication between a user and a contact takes place via an Internet server. In order to update the contact list, a user initiates the method. Upon initiating the method, an electronic message is transmitted to the address of an Internet server where authenticity of the electronic message is verified before further action. Once verified, the server commences a process for updating the contact list information. The server transmits a message to each electronic address of contacts within the contact list. Typically, the electronic message includes a subject line indicating a request for contact information update as well as current contact information for the recipient in order to allow the recipient to indicate for convenience that no change has occurred when this is the case. There are a number of possible responses that the server may receive and each is detailed below.

A first possible response is as follows: the transmission may fail and result in an undeliverable electronic message. In these cases, it is evident that either the contact information used is no longer current or the failed message delivery was caused by a temporary system or network problem. Preferably, when a delivery error occurs the electronic message is re-sent to verify that the failure was not caused by a temporary problem. Upon determining that the failure was not caused by a temporary system problem through a predetermined number transmission resends, the contact is noted as invalid since it is evident that the contact information used is no longer current.

A second possible response is as follows: the transmission is not responded to but no electronic message delivery failure is noted, in which case it is assumed that the contact information has been received and is correct. Of course, this is not necessarily the case, and optionally for important contacts, a follow up communication is initiated to verify the information. Preferably, a request for client contact is provided after a predetermined number of consecutive occurrences of this possible response from a same contact.

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Advantageously, the contact information is only updated when the user requests  
15 an update, and as such, the user's information is not changed without their knowledge, but alternatively the information is updated without the user's knowledge.

In an embodiment, the user specifies at which time intervals to automatically update their contact information. In a properly functioning system with all of the contacts having a method of automatically responding to an update request the contact information  
20 is maintained at intervals sufficiently short to ensure that it is maintained most current at all times.

Clearly, such an embodiment would be obtrusive to each contact if a means for automatically replying is not supported. Also, when an automated reply process is available to each contact, the method is not obtrusive to the contacts and as such, is a  
25 convenient method for contact data update.

Referring to **Fig. 4**, a method of automatically replying to an update request is shown. For the purpose of automating the reply process, a first time a contact is contacted in accordance with the method of Fig. 3a,b for updating of their contact information,



attached to the electronic message is an automated reply process for installation within their system. This process is optionally installed on the system by the contact or another person. Of course, the contact, at their discretion, may choose not to install the automated reply process. Once installed, the automated reply process acts to intercept update request  
5 electronic messages received so as to prevent an individual from feeling inconvenienced by future update requests.

Upon installation of the automated reply process, an indication of such is provided to the user. Once such an indication is received, a flag is set on the user system indicating same. Optionally, future update requests are then transmitted at more frequent  
10 time intervals from the user to the contact since the automated reply process has been installed. Preferably these intervals are specifiable by the user.

The contacts provide their contact information to the automated reply process through known input/output processes. For example, a window is provided with fill in boxes and the user fills in their contact information using a keyboard and a pointing  
15 device in the form of a mouse. The automated reply process stores the information, preferably in non-volatile storage, and upon intercepting an update request transmitted from the server, the automated reply process transmits the stored contact information to the server in a known format. Using a known format obviates a need to parse the received message since data is easily extractable based on the known format.

Referring to **Fig. 5**, a method of updating the user contact database is shown  
20 obviating the use of a server. A user system transmits electronic messages to systems associated with contacts contained in the user's contact list. Typically, the electronic messages are sent to an electronic address in the form of email message for each contact. The electronic messages request updated contact information. Here, a process similar to  
25 that described with reference to Fig. 4 is conducted but the user system acts as the server and automatically updates information stored therein. The user is notified of any new contact information changes requiring update on their electronic contact database through the above process. In the case when the contact list is stored on a personal digital

assistant (PDA), upon connecting the PDA with the user system an option is available for updating the user contact list.

In **Fig 6** another embodiment of the invention is shown. Here a contact having an automated reply process installed updates their contact information whenever it changes.

5 In accordance with the method of Fig. 5, this is beneficial since it allows the automated reply process to reply automatically with updated contact information. Here, the automated reply process also, automatically, transmits the updated contact information to each contact within their contact list. This allows for each contact to maintain up to the minute contact information. Of course, when each contact has an automated reply process  
10 installed, the electronic message containing the updated contact information is intercepted and the contact database on the contact's system is automatically updated therewith. Thus, a user's system serves two separate but related functions of polling contacts to ensure accurate updated contact information and transmitting contact information updates relating to the user's contact information upon a change thereto. The  
15 installation of automated reply processes on each system ensures that the entire contact database update process is fully transparent to each user other than a need to enter the contact information when it changes.

In the above-described system a single user has an electronic contact list with a number of electronic addresses of contacts stored within the list. As more contacts are  
20 initiated the size of the user contact list increases. Since each contact is prompted to use the contact update system and since each contact has numerous other contacts, the system grows exponentially without requiring any contacts to use the system and without requiring subscription to a central server when a peer to peer contact update method is employed. Thus, beginning with a single user, communications to other users on their  
25 contact list and then users on their contact lists and so forth. As such, the system is self-advertising and self propagating. That said, the system is not like a virus since each individual to whom an update request message is sent has an option of inaction and the general system continues to function predictably. Thus, the overall system is always under the control of participating users.

In another embodiment the invention also has the capability to, over time, rebuild a user contact list, in the case when a user contact list is damaged. Having the auto reply process installed on the contact systems results in a periodic electronic message sent from other contact systems to the user system, each requesting an update of contact

5 information. Receiving this message at the user system results in the automated reply process storing the contact electronic address of the contact in the user's contact list. At the time for automatic updating of contacts stored in the user's contact list, the automated reply process transmits an electronic message to the electronic address of all contacts stored within the user contact list. Receiving a reply message from this contact results in  
10 the contact information being stored under that contact profile in the user contact list. The user contact list now contains the contact information for one of the contacts, which had been previously lost. Over time, as more update requests are communicated between the contacts and the user, the auto reply process will also serve to rebuild the damaged user contact list.

15 Another embodiment of the invention also covers the exchange of more than contact information between a user system and a contact system. Typically, the automated reply process takes care of the updating of contact information for both user and contact systems. However, the auto reply process can also be used for the updating of other data, for instance electronic data files. The user indicates a filename they are  
20 looking for and inputs this filename into the input process of the automated reply process. The automated reply process sends out an electronic message from the user system to contact systems with message contents indicating a request for the specific file. On the contact system the automated reply process traps and interprets the incoming electronic message. In this case the message is requesting a specific electronic data file. There are  
25 two possible reply messages from the contact system. If the file is stored on the contact system then an electronic message with the attached file is transmitted via the automated reply process to the user system. Otherwise if the file was not found then a message indicative of such is sent to the user system. Clearly this form of information exchange between a user and their contacts is useful for sending more than just contact information  
30 update request messages. Preferably, a handshake is initiated when a file is found thereby allowing the originating system to select a source for the file when more than one system

has a copy thereof. In this way, a single file is not transmitted from numerous other systems.

Advantageously no information about the contact is stored on any server and the contact information only resides on the systems of the contact or the user.

- 5            Numerous other embodiments may be envisioned without departing from the spirit or scope of the invention.